

Two new species and a new synonymy of the subfamily Coelotinae (Araneae: Amaurobiidae) from Kyushu, Japan

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Abstract — Three species of coelotine spiders of the genera *Coelotes* and *Tegecoelotes* from Kyushu District, Japan, are reviewed. Two new species of the genus *Coelotes* are described under the names, *Coelotes bifurcatus* n. sp. and *C. hiradoensis* n. sp. The former new species is distributed in Nagasaki, Saga and Fukuoka Prefectures, northern Kyushu, and is characteristic in having the bifurcate apophysis of male palp. The latter new species is recorded only from Hirado Island in Nagasaki Prefecture and characteristic with the palpal conductor extending in the direction of the tip of cymbium in males and long and slender epigynal teeth in females. *Tegecoelotes muscicapus* (Bösenberg & Strand 1906) described using a male holotype, and *Tegecoelotes ignotus* (Bösenberg & Strand 1906) described with two female syntypes are considered to be synonymous, and the former is regarded as a junior synonym of the latter. *Tegecoelotes ignotus* is recorded for the first time since the original description in 1906. The intraspecific variation recognized in epigynum of this species is reported.

Key words — *Coelotes*, *Tegecoelotes*, Araneae, new species, new synonymy, Kyushu, Japan

Introduction

Because many coelotine spiders (subfamily Coelotinae) do not disperse by ballooning, most of the species tend to show regional distribution and geographical variation. More than 50 species of the subfamily are known from Japan up to the present (Platnick 2006). Although a large number of studies have been made on this group from Honshu, the main island of Japan, and the Ryukyu Islands (Komatsu 1957; Yaginuma 1967, 1977; Nishikawa 1973, 1974, 1976, 1983; Arita 1974, 1976; Shimojana 2000, 2003; and others), only a few studies have been made on those from Kyushu (Bösenberg & Strand 1906; Yaginuma 1969; Yamaguchi & Yaginuma 1971).

The first author of the present paper (K.-i. Okumura) has collected sufficient number of coelotine spiders in Nagasaki Prefecture and its neighboring areas in northern Kyushu. In the material, we recognized two new species of the genus *Coelotes*, which will be described in the present paper under the names, *Coelotes bifurcatus* n. sp. and *C. hiradoensis* n. sp. Up to the present, thirteen species of the coelotine spiders were recorded from Nagasaki Prefecture (Irie 2002, Okumura 2005), including two endemics, *Ambanys grandivulvus* (Yaginuma 1969) and *Coelotes uenoi* Yamaguchi & Yaginuma 1971. *Coelotes hiradoensis* also seems to be endemic to Nagasaki Prefecture, while *Coelotes bifurcatus* was widely distributed in Nagasaki, Saga and Fukuoka Prefectures.

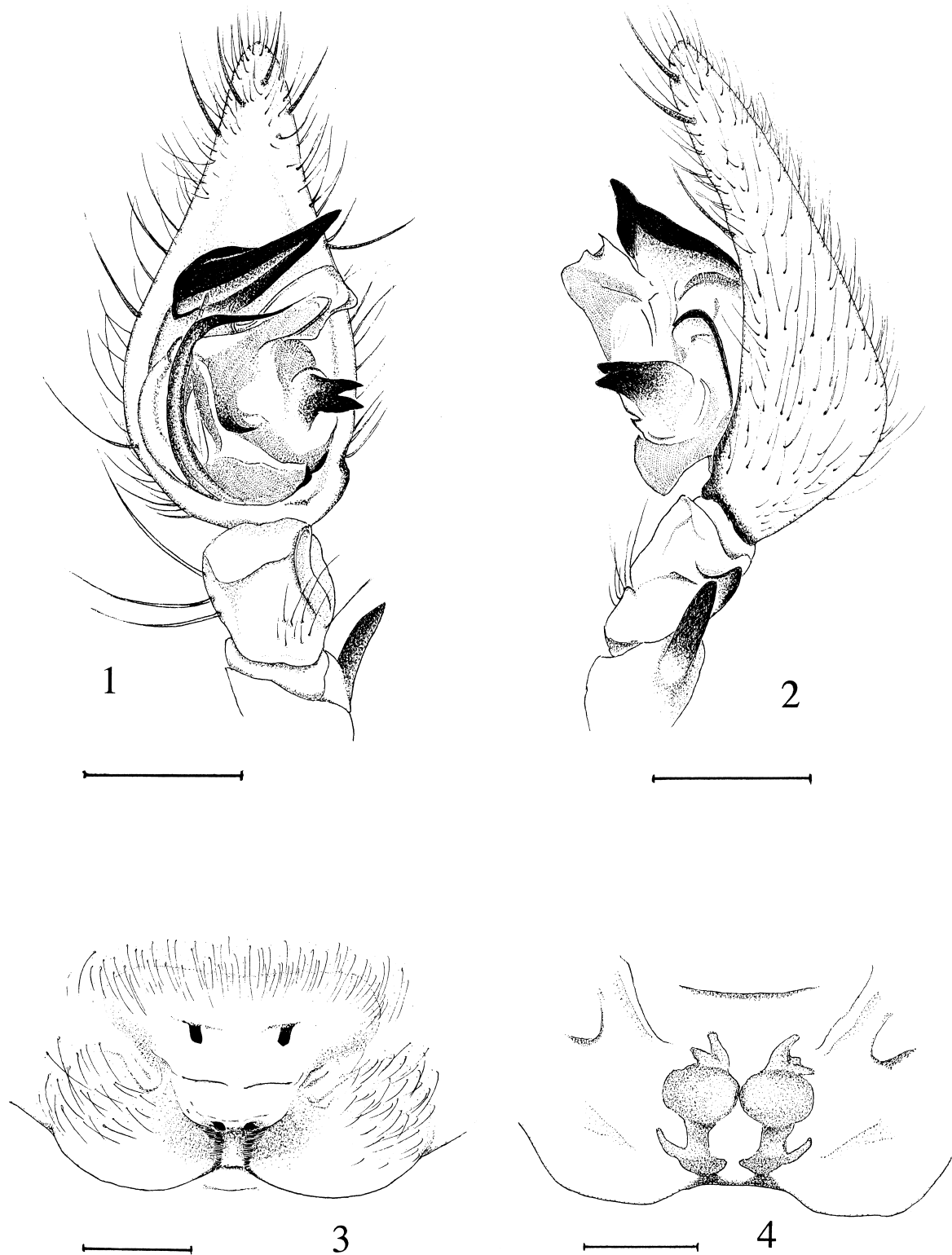
Besides, a new synonymy of the spiders of the genus *Tegecoelotes* of Japan is reported herein using the fresh material collected from Nagasaki Prefecture. *Tegecoelotes ignotus* known only with the female sex and *Tegecoelotes muscicapus* known only with the male are regarded as conspecific. Although both the species were originally described in the same article by Bösenberg and Strand (1906), *T. ignotus* is regarded as a senior synonym of *T. muscicapus* by the page precedence.

The abbreviations used in this paper are as follows: ALE, anterior lateral eye; AME, anterior median eye; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye.

The type specimens of the new species described in this paper will be deposited in the collection of the Department of Zoology, National Science Museum (Natural History), Tokyo. Other specimens examined are preserved in the first author's private collection. This study is partly supported by Grant-in-aid No.16540431 for Scientific Research from the Ministry of Education, Science, Sports and Culture, Japan.

Coelotes bifurcatus n. sp.
(Japanese name: Futamata-yachigumo)
(Figs. 1–4)

Types. Holotype: ♂, Mt. Yasuman-dake, 500 m alt., Hirado Is., Nagasaki Pref., Japan, November 13, 2005.



Figs. 1–4. *Coelotes bifurcatus* n. sp. — 1, Male palp, ventral view; 2, same, retrolateral view; 3, epigynum; 4, same, internal female genitalia. Scales: 0.5 mm.

Allotype: ♀, same data as for the holotype. Paratypes: 3♀, Takaki-cho, Kitatakaki-gun, Nagasaki Pref., Japan, February 18, 2006, K. Okumura leg.

Description. Male holotype. Measurements in mm: Total

length 10.0; carapace 5.2 long, 3.6 wide; abdomen 4.8 long, 3.0 wide; sternum 2.9 long, 2.1 wide. Eye sizes: AME 0.14, ALE 0.24, PME 0.21, PLE 0.24. Distances between eyes: AME-AME 0.11, AME-ALE 0.10, PME-PME 0.10, PME-

PLE 0.27, AME-PME 0.17, ALE-PLE 0.06. MOA: anterior width 0.39, posterior width 0.52, length 0.56. Leg measurements as shown in Table 1.

Cheliceral retromargin with two teeth.

Male palp (Figs. 1–2): embolus short, conductor sword-shaped, tegulum with a robust and forked projection, patellar apophysis long and curved slightly, retrolateral tibial apophysis flat and extended to distal end of tibia, lateral tibial apophysis small.

Coloration: carapace blackish brown, dorsum of abdomen blackish brown with yellowish brown chevrons, sternum reddish brown, chelicerae, maxillae and labium reddish black, legs yellowish brown, but metatarsi and tarsi darker.

Female allotype. Measurements in mm: Total length 13.4; carapace 6.0 long, 4.0 wide; abdomen 7.3 long, 4.7 wide; sternum 2.8 long, 2.2 wide. Eye sizes: AME 0.13, ALE 0.27, PME 0.23, PLE 0.25. Distances between eyes: AME-AME 0.10, AME-ALE 0.12, PME-PME 0.17, PME-PL 0.33, AME-PME 0.23, ALE-PL 0.10. MOA: anterior width 0.50, posterior width 0.63, length 0.60. Leg measurements shown in Table 1.

Cheliceral retromargin with two teeth.

Epigynum and internal genitalia (Figs. 3–4): anterior portion of epigynal plate inverted-triangle-shaped with nipple-like epigynal teeth, situated distantly from each other, posterior protuberance symmetric with central vallecule.

Coloration of female allotype almost same as in the male holotype.

Other specimens examined. NAGASAKI PREF.: Same locality as the holotype and allotype, 1♀, January 7, 2006; Matsuura, 1♀, November 19, 2005; Fuku-shima Is., 1♀, December 29, 2005; Omura, 2♀, January 1, 2006; Takaki-cho, Kitatakaki-gun, 3♀, February 18, 2006. SAGA PREF.: Hiratani, Kashima-shi, 3♀, January 1, 2006. FUKUOKA PREF.: Mt. Aburayama, 1♀, December 30, 2005, K. Okumura leg.

Distribution. Northern area of Kyushu, Japan (Nagasaki, Saga and Fukuoka Prefs.).

Etymology. Specific name is derived from the bifurcate apophysis of the tegulum of male palp.

Remarks. This species resembles *Coelotes unicatus* Yaginuma 1977, in large-sized and dark-colored external feature, and in having two teeth on cheliceral retromargin,

but can be clearly distinguished from the latter species by the structure of genital organs of both sexes. Especially the bifurcated median apophysis of the male palp is characteristic.

Coelotes hiradoensis n. sp.

(Japanese name: Hirado-yachigumo)

(Figs. 5–8)

Types. Holotype: ♂, Mt. Yasuman-dake, 500 m alt., Hirado Is., Nagasaki Pref., Japan, November 13, 2005. Allotype: ♀, same data as for the holotype. Paratypes: 2♀, same locality as the holotype and allotype, January 7, 2006, 1♂, Nakano, Hirado Is., Nagasaki Pref., Japan, February 4, 2006, 1♀, Kyosaki, Hirado Is., Nagasaki Pref., Japan, January 22, 2006, K. Okumura leg.

Description. Male holotype: Measurements in mm: Total length 6.3; carapace 3.1 long, 2.0 wide; abdomen 2.9 long, 1.8 wide; sternum 1.6 long, 1.3 wide. Eye sizes: AME 0.09, ALE 0.14, PME 0.13, PLE 0.13. Distances between eyes: AME-AME 0.03, AME-ALE 0.03, PME-PME 0.05, PME-PL 0.11, AME-PME 0.06, ALE-PL 0.03. MOA: anterior width 0.20, posterior width 0.30, length 0.28. Leg measurements shown in Table 2.

Cheliceral retromargin with two teeth.

Male palp (Figs. 5–6): embolus comparatively long and arciform, conductor stout and pointing to the direction of the tip of cymbium, patellar apophysis relatively long with a small accessory spine. Coloration: carapace yellowish brown, dorsum of abdomen grayish brown with yellowish brown chevrons, sternum yellowish brown, chelicerae, maxillae and labium reddish brown, legs yellowish brown, but metatarsi slightly darker.

Female allotype. Measurements in mm: Total length 5.7; carapace 2.8 long, 1.7 wide; abdomen 2.9 long, 1.6 wide; sternum 1.4 long, 1.2 wide. Eye sizes: AME 0.08, ALE 0.14, PME 0.14, PLE 0.13. Distances between eyes: AME-AME 0.02, AME-ALE 0.05, PME-PME 0.05, PME-PL 0.10, AME-PME 0.08, ALE-PL 0.05. MOA: anterior width 0.17, posterior width 0.30, length 0.29. Leg measurements as shown in Table 2.

Cheliceral retromargin with two teeth.

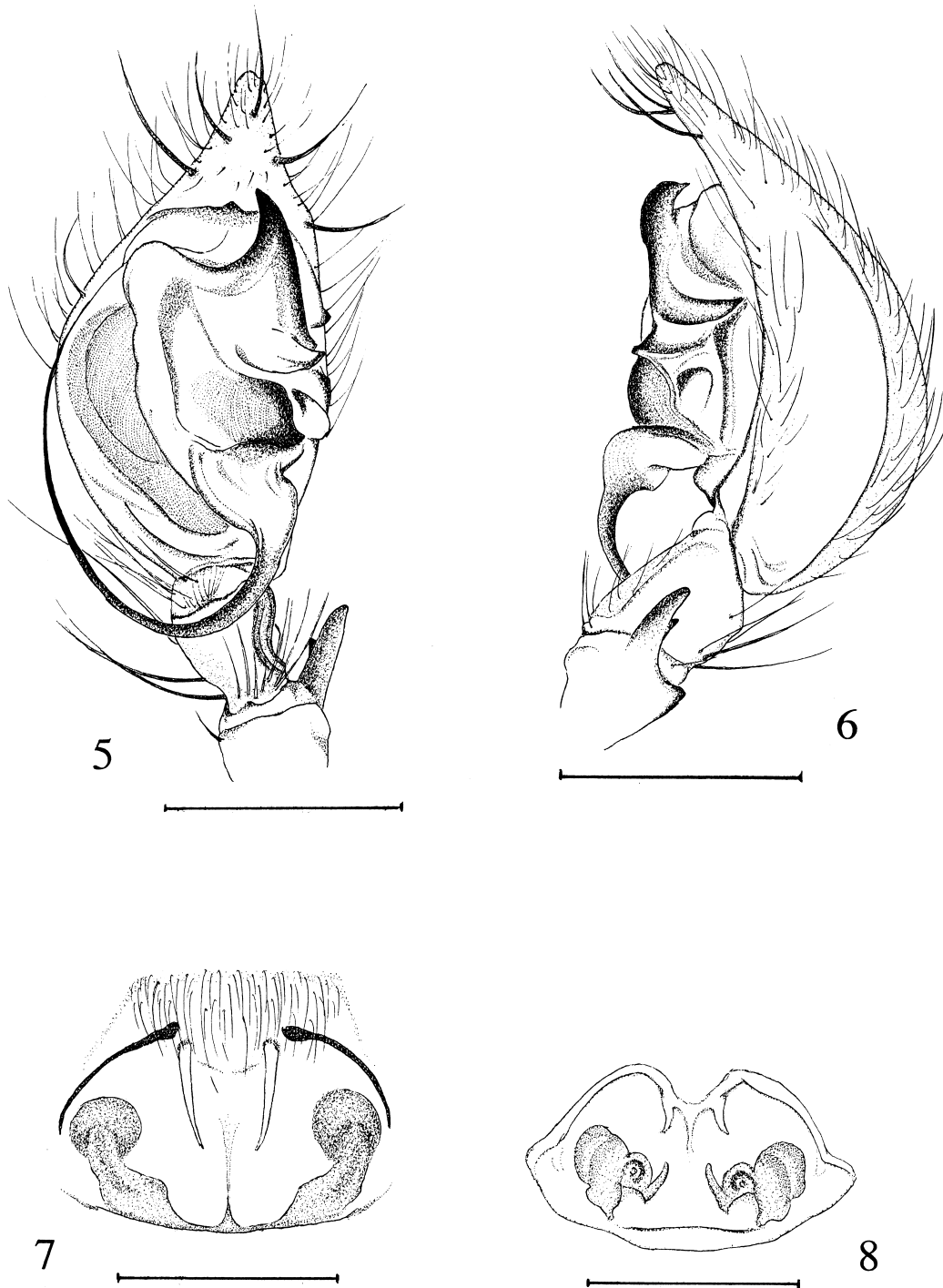
Epigynum and internal genitalia (Figs. 7–8): epigynal

Table 1. Leg measurements of *Coelotes bifurcatus* n. sp. (♂/♀, in mm).

Legs	Femur	Patella and tibia	Metatarsus	Tarsus	Total
I	4.23/4.03	5.14/4.94	3.58/3.19	2.08/1.89	15.03/14.05
II	4.03/3.77	4.55/4.36	3.19/2.99	2.02/1.76	13.79/12.88
III	3.58/3.19	3.97/3.84	2.80/3.06	2.02/1.63	12.37/11.72
IV	4.49/4.36	5.40/5.46	5.07/4.68	2.15/2.02	17.11/16.52

Table 2. Leg measurements of *Coelotes hiradoensis* n. sp. (♂/♀, in mm).

Legs	Femur	Patella and tibia	Metatarsus	Tarsus	Total
I	2.20/1.73	2.63/2.08	1.61/1.27	1.02/0.75	7.46/5.83
II	1.90/1.43	2.27/1.84	1.65/1.12	0.90/0.75	6.72/5.14
III	1.80/1.45	2.00/1.57	1.67/1.25	0.82/0.67	6.29/4.94
IV	2.27/1.92	2.90/2.27	2.43/1.76	1.04/0.78	8.64/6.73



Figs. 5–8. *Coelotes hiradoensis* n. sp. — 5, Male palp, ventral view; 6, same, retrolateral view; 7, epigynum; 8, same, internal female genitalia. Scales: 0.5 mm.

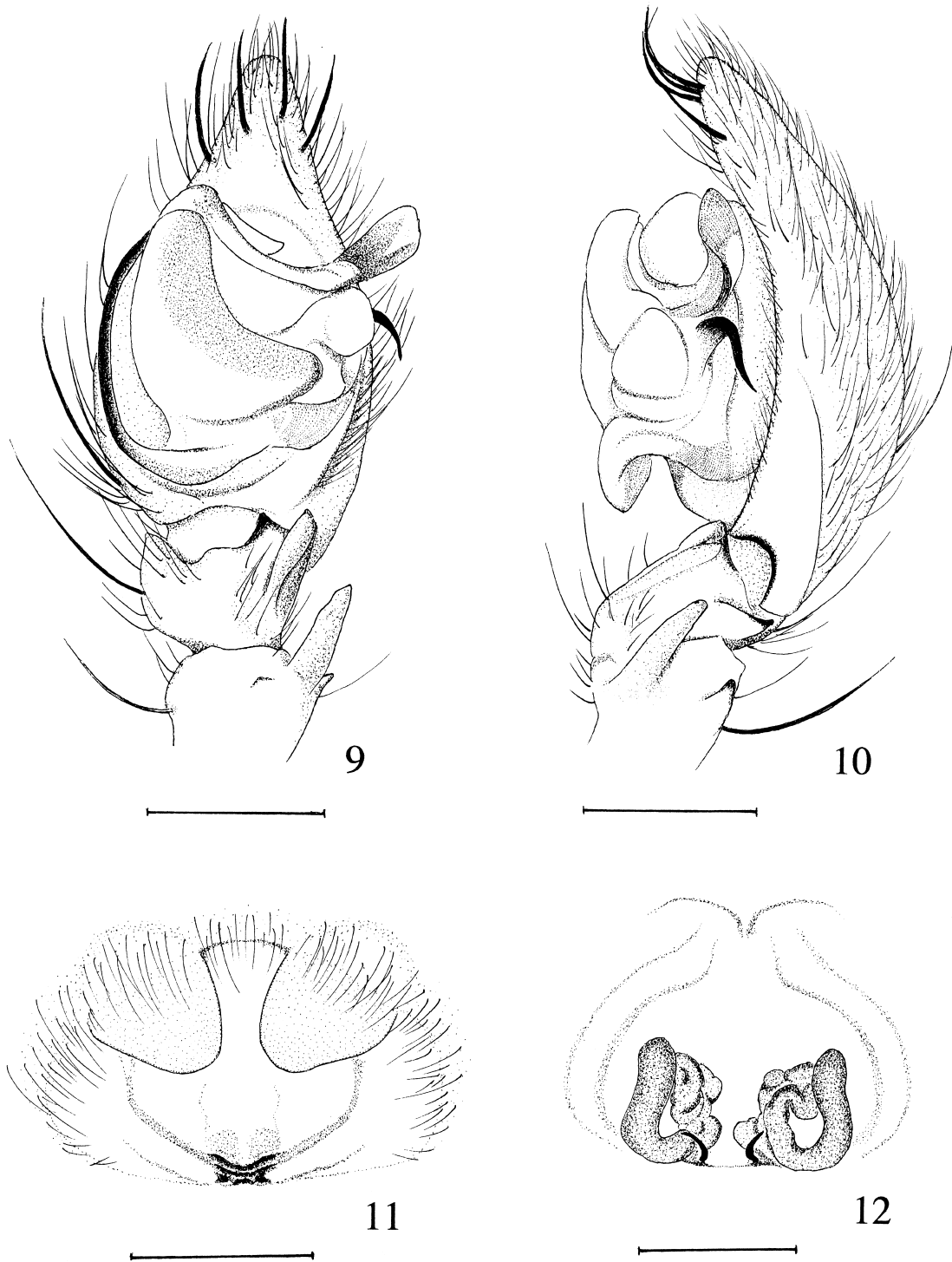
teeth long and narrow originated at anteriorly, and thin and sclerotized frames located at both sides of epigynal plate respectively.

Coloration of the female allotype almost same as in the male holotype.

Distribution. Hirado Is., Nagasaki Pref., Japan.

Etymology. Specific name is derived from the type locality.

Remarks. This species is one of the small-sized and pale-colored coelotine spiders and resembles *Coelotes tarumii* Arita 1976, but can be distinguished from the latter species by the structure of genital organs of both sexes and by the number of teeth of cheliceral retromargin. The conductor of the male palp of this new species is extending in the direction of the tip of cymbium. The epigynal teeth are long and slender. The cheliceral retromargin of *Coelotes hiradoensis*



Figs. 9–12. *Tegecoelotes ignotus* (Bösenberg & Strand, 1906). — 9, Male palp, ventral view; 10, same, retrolateral view; 11, epigynum; 12, same, internal female genitalia. Scales: 0.5 mm.

has two teeth, while that of *Coelotes tarumii* has four.

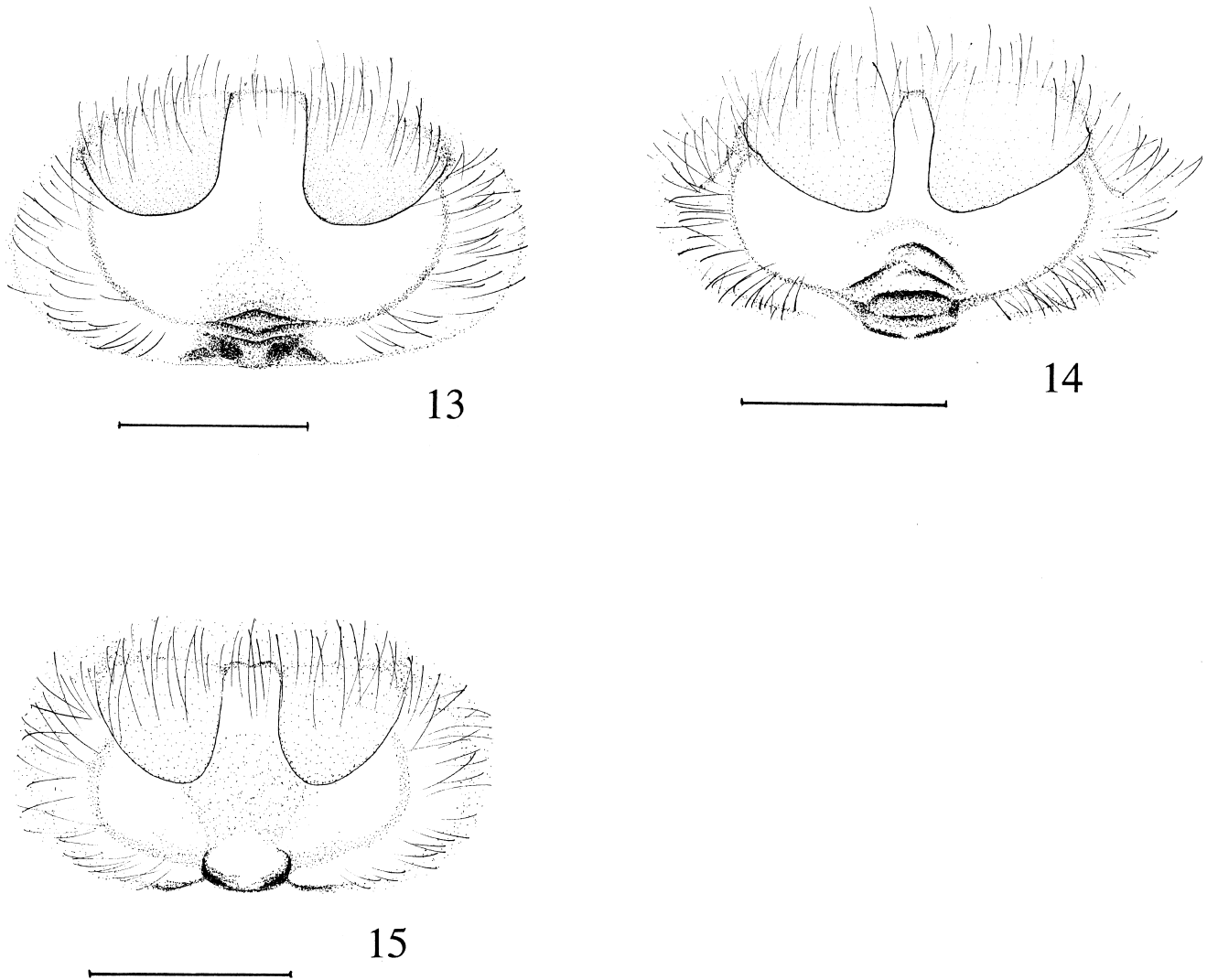
Tegecoelotes ignotus (Bösenberg & Strand 1906)
(Japanese name: Katachigai-yachigumo
(Figs. 9–15)

Agelena ignota Bösenberg & Strand 1906, p. 299, Fig. 466

(two female syntypes, from Japan, not examined); Saito 1941, p. 34, Fig. 46; Ishinoda 1957, p. 12, Fig. 3.

Tegenaria muscicapa Bösenberg & Strand 1906, p. 302, Fig. 479 (male holotype, from Saga, Japan, not examined); Saito 1941, p. 33. **New synonymy.**

Coelotes ignotus: Lehtinen 1967, p. 224; Nishikawa 1974, p. 178, Fig. 33.



Figs. 13–15. Variations of epigynum of *Tegecoelotes ignotus* (Bösenberg & Strand, 1906). — 13, from Hirado Is.; 14, from Kabashima, Goto Is.; 15, from Nagayo, Nishisonogi-gun. Scales: 0.5 mm.

Tegecoelotes ignotus: Wang 2002, p. 134, 2003, p. 568, Fig. 83.

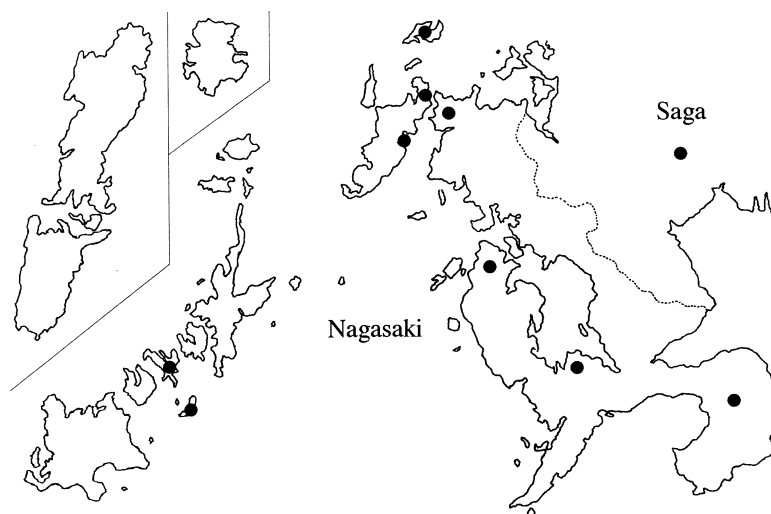
Tegecoelotes muscicapus: Wang 2002, p. 134, 2003, p. 569, Fig. 84.

Specimens examined. NAGASAKI PREF.: Narushima, Goto Is., 1♂, March 1, 2003; 1♀, January 25, 2004; 1♂1♀, February 28, 2004; 1♂1♀, February 6, 2005; Kabashima, Goto Is., 3♀, February 28, 2004; Hirado Is., 1♀, October 23, 2005; 4♂6♀, November 5, 2005; 1♂2♀, November 28, 2005; 3♂4♀, January 22, 2006; 1♂2♀, February 5, 2006; Saikai-shi, 1♂, November 2, 2005; Mt. Kusenbu-dake, Unzen, 1♂, December 3, 2005; Azuchi-oshima Is., 1♂1♀, December 10, 2005; Tabira-cho, Hirado, 1♀, January 28, 2006; Mt. Koton-o-dake, Nagayo, 2♀, February 19, 2006, K. Okumura leg.

Notes. *Agelena ignota* (*Tegecoelotes ignotus* at the present) and *Tegenaria muscicapus* (*Tegecoelotes muscicapus* at

the present) were described from Japan by Bösenberg and Strand (1906) in the same article. Although the type locality of the latter species was recorded as Saga in the original description, the details of type locality of the former was not given. In addition to this, the descriptions of these two species were based only on a single sex. *Agelena ignota* was based on two female specimens and *Tegenaria muscicapus* was based on a male. Both species have never been correctly recognized since long, because the identification was difficult with the original description. However, Wang (2003) recently redescribed these two species with illustrations of the genital organs in detail based on the type specimens deposited in the Senckenberg Museum, Frankfurt am Main, and transferred them to the genus *Tegecoelotes*, so that we became able to identify exactly these two species.

After a careful examination of fresh specimens collected in Nagasaki Prefecture adjoining to Saga Prefecture, we considered that *Tegecoelotes ignotus* known only with



Figs. 16. Distribution of *Tegecoelotes ignotus* (Bösenberg & Strand, 1906).

female and *Tegecoelotes muscicapus* known only with male are conspecific. The following facts supported this presumption: 1) these two species were collected from the same areas and the distributional ranges of both exactly overlap with each other, and 2) the characteristics of the coloration and sizes of both closely resemble each other. Furthermore, the detailed survey of the first author on Narushima Island belonging to the Goto Islands, for three years revealed that no species of the genus *Tegecoelotes* other than females of *T. ignotus* and males of *T. muscicapus* occurs on that island. Thus, *Agelena ignota* Bösenberg & Strand 1906, p.299, and *Tegenaria muscicapa* Bösenberg & Strand 1906, p. 302, are synonymous each other. We have chosen the former name as valid and regarded the latter as a junior synonym of the former.

Distribution. Saga and Nagasaki Prefs., Kyushu, Japan (Fig. 16).

Remark. The intraspecific variation of epigynum is recognized in some individuals as in Figs. 11, 13–15.

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